

Discussion on the White Paper

Existing Docs

- Depth document
- FNAL-BNL Long Baseline report
- hep-ex/0608023v2 ("Proposal for an experimental program...")
- NuSAG Report
- PRD 68 ("Very Long Baseline...")
- hep-ex/0306053 ("Megaton Modular...")
- UNO Proposal
- Hyper-K proposal
- APS neutrino study
- ...

This will not be the first time this idea has been presented

So What's New?

- Beam and detector location now defined
- Depth/detector gives broad program of physics and astrophysics
- Most pre-requisite experiments are funded
- Additional precision on ν mixing parameters

Goals

- Define answers to sensitivity questions—what is needed to do compelling physics?
 - including detector mass
 - detector technology
 - beam intensity
- Inform the community about physics opportunities
- Provide funding agencies with `ammunition' to push program
- Provide touchstone doc. for future proposal development

Q: Should this be intended as part of detector technology decision process?

Push the Breadth

FNAL→DUSEL is an 'extended facility' with which many experiments can be done

- neutrino CP violation
- neutrino matter effect/mass hierarchy
- θ_{13} (with beam)
- $\theta_{12}, \Delta m^2_{12}$ (with beam)
- Proton decay
- $\theta_{23}, \Delta m^2_{23}$ (with beam)
- $\theta_{23}, \Delta m^2_{23}$ (with atmospheric)
- solar day/night
- solar hep vs
- supernova vs
- Diffuse supernova vs
- Exotics (fractional charge, Q-balls...)
- geoneutrinos
- WIMP annihilation in Sun/Earth
- θ_{13} with source/reactor
- near detector physics (xs, exotics)

Sample Outline

High Level Outline:

- I. Status of the field
- II. Opportunity of the site and FNAL
- III. Physics Program
- IV. Beam requirements
- V. Detector Options
- VI. Sample costs and schedule

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Open Questions on Scope

Q1: How much site-related detail? (e.g., rock removal...)

Q2: Include a plan for a detector decision, or leave technology open?

Q3: How much beam detail?

Q4: How much detector detail?

Q5: How much technical detail (calibrations, DAQ...)?

Q6: How much engineering detail?

Q7: Do we include a discussion of phases (beam and detectors)

Q8: Do we need to include things like safety, outreach,...?

White Paper Plans and Schedule

- Need a small (3-5 people) `White Paper Editorial Board`
- Will draft more complete outline
- Generate writing/analysis assignments
- Complete doc ready before end of calendar year?